TRANSGENIC SYSTEMS FOR THE MANUFACTURE OF POLY(2-HYDROXY-BUTYRATE-CO-3-HYDROXYHEXANOATE)

Abstract of the Disclosure

Methods for engineering transgenic organisms that synthesize polyhydroxyalkanoates (PHAs) containing 3-hydroxyhexanoate as comonomer have been developed. These processes are based on genetically engineered bacteria such as *Escherichia coli* or in plant crops as production systems which include PHA biosynthetic genes from PHA producers. In a preferred embodiment of the method, additional genes are introduced in wild type or transgenic polyhydroxybutyrate (PHB) producers, thereby creating new strains that synthesize 3HH monomers which are incorporated into PHAs. The 3HH monomer preferably is derived in microbial systems using butanol or butyrate as feedstocks, which are precursors of 3-hydroxyhexanoyl-CoA. Pathways for *in vivo* production of butyrol-CoA specifically encompassing butyryl-CoA dehydrogenase activity are provided.